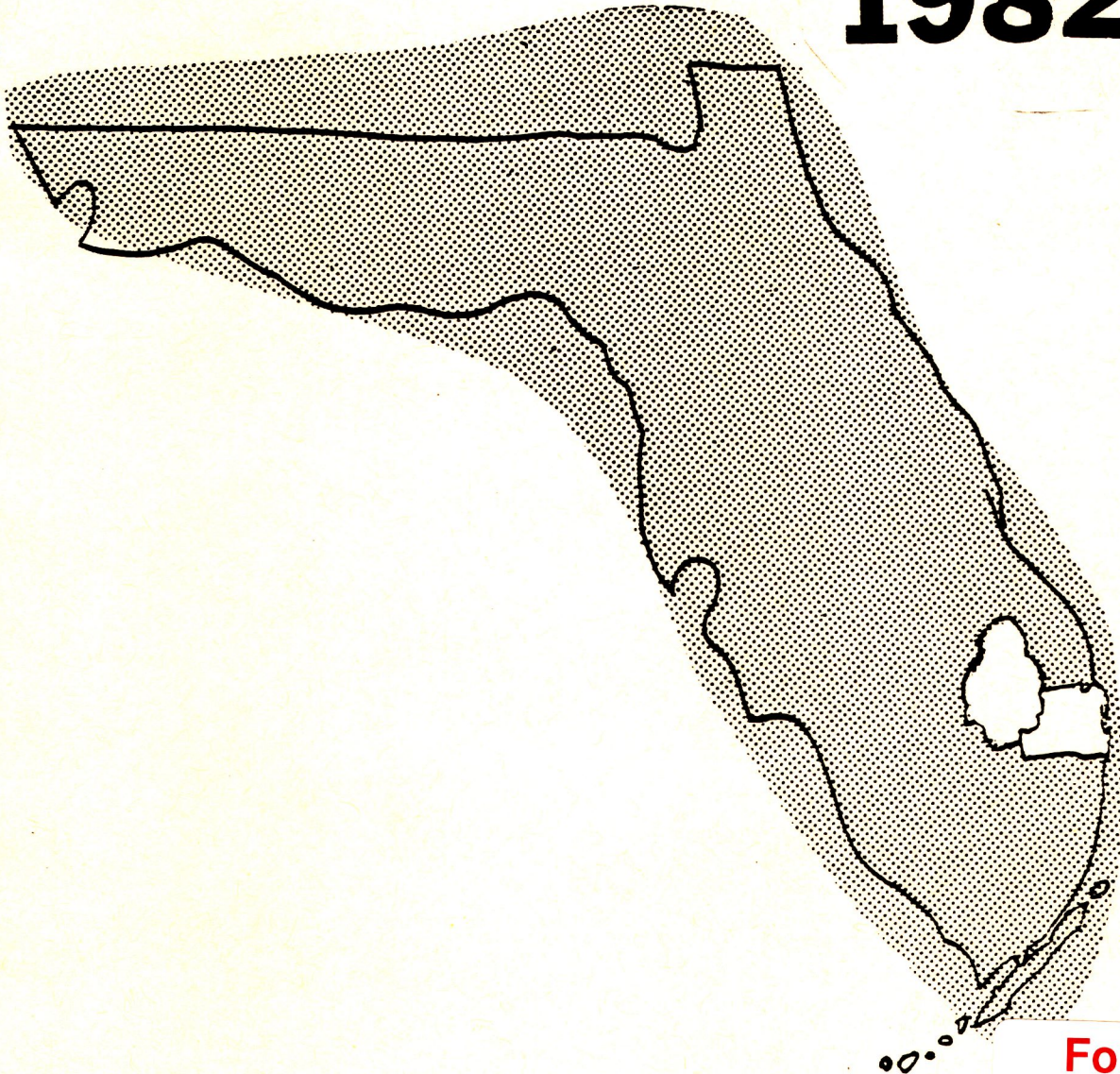


**PALM BEACH COUNTY, FLORIDA  
DIVISION OF ENVIRONMENTAL  
SCIENCE AND ENGINEERING  
AIR POLLUTION CONTROL**

# **ANNUAL REPORT 1982**



**For Reference**

Not to be taken from this room

**PALM BEACH COUNTY HEALTH DEPARTMENT**

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# I

## INTRODUCTION

Palm Beach County is located along the southeast coast of Florida, and is part of what is generally called the "Florida Gold Coast". The "Gold Coast" consists of four counties: Palm Beach, Broward, Dade and Monroe. Palm Beach County is geographically separated into two regions: one region is a highly urbanized costal strip, stretching approximately forty-five (45) miles from Tequesta on the north, to Boca Raton on the south: and the other is agricultural, located in the western portion of Palm Beach County (The Glades Area).

The population distribution within the County depicts this same unusual pattern. Virtually all of the population is located in two relatively small areas: the coastal strip adjacent to the the Atlantic Ocean and along a narrow band adjacent to Lake Okeechobee. A population table is included in this section (Table 1.)

The majority of the population, approximately 90%, is located on the coast from a distance of approximately 15 miles inland from the Atlantic Ocean. Developments through the years have resulted in several municipalities along the coastal strip.

The band adjacent to Lake Okeechobee contains virtually all of the remaining 10% of the County's population. Municipalities which are included in the Glades area are: Belle Glade, Pahokee and South Bay. The economy of this area is an agricultural one, based principally on sugar cane and winter vegetables.

Tourism and related fields continue to be the major economic factors in the urban area. Tourism has increased along with increased population. Other major industries in the area include building construction and related fields, agriculture, aircraft testing facility, electronics, cement and

concrete, asphaltic concrete and the service industries.

The complexity of the problems of Air Pollution Control are related to the widespread growth of Palm Beach County. Advances in environmental protection activities, which are being carried out by this program, have been utilized in order to keep abreast of Air Pollution problems. These activities are characteristic of urban areas across the nation.

The review of applications for the state air permits is one of the many activities handled by the Air Pollution Section of the Palm Beach County Health Department. The Florida Department of Environmental Regulation requires both a permit to construct and a permit to operate any air pollution source. The review of permit applications places our local program in a position to prevent the improper construction of a pollution source and to assure that adequate pollution control equipment is utilized and maintained.

Other activities include: consultations with industries and engineers on impending permit action; enforcement action; maintenance of monitoring network; and required compliance schedule and increments of progress surveillance. Also, our local program investigates and initiates the necessary follow-up action regarding all citizen compliants. As part of the State Air Implementation Plan, this agency is required to conduct source inspections of existing and new sources in Palm Beach County; in order to assure that all sources are in compliance with State Air Pollution Regulations.

The air monitoring capabilities of our program continues to be the ultimate means of maintaining air quality standards in Palm Beach County. The Environmental Control Air Monitoring Laboratory located in West Palm Beach is capable of continuously measuring stationary and mobile source related pollutants, i.e., Carbon Monoxide (CO), Nitrogen Dioxide (NO<sub>2</sub>), and four meteorological parameters (wind speed, wind direction, temperature, and relative humidity). The data is collected through the use of recorders plus a centrally controlled data acquisition system. Our ozone



monitor was removed from the air monitoring laboratory in 1979 and relocated in the Town of Royal Palm Beach in order to comply with the E.P.A. siting criteria. A second ozone monitor was placed at our 20 Mile Bend Site. Both of the ozone sites are National Air Monitoring Sites (NAMS) and are equipped with continuous meteorological sensing equipment. Our sulfur dioxide (SO<sub>2</sub>) site was also relocated in accordance with E.P.A. criteria and placed at Riviera Beach.

All data from the aforementioned systems is transcribed on SAROAD (Storage and Retrieval of Aerometric Data) forms for input into the National Aerometric Data Bank. Furthermore, the Air Pollution Control Program has continued to monitor for the frequency and intensity of temperature inversions at the Division of Forestry's observation tower located in Loxahatchee, Florida.

In addition to the above, our air quality monitoring network includes ten (10) high volume particulate sites. All analysis pertaining to air pollution is performed by our chemistry laboratory located in Delray Beach.

Public relation activities during the past year by the Air Pollution Section of the Palm Beach County Health Department have consisted of continued steps to inform the general public of the programs and procedures established to maintain our good air quality. These activities include wide distribution of our Annual Report, extending invitations to groups of school and environmental clubs to visit our facilities, and presentations to school and civic groups throughout the County on the topic of "Air Pollution Control on Palm Beach County". In addition, a major aspect of our program's public relations activities is the dissemination, twice daily, of an "Air Quality Index" to the local news media. The index utilizes the daily results of all measured pollutants.

TABLE 1

POPULATION FOR PALM BEACH COUNTY AND MUNICIPALITIES:

<u>MUNICIPALITY</u>	U.S. Census Bureau Counts 1970	U.S. Census Bureau Counts 1980	Univ. of Fla. Population Estimates 1982
Atlantis	425	1,325	1517
Belle Glade	15,949	16,535	16,928
Boca Raton	28,506	49,505	51,302
Boynton Beach	18,115	35,624	37,532
Briny Breezes	481	387	381
Cloud Lake	136	160	145
Delray Beach	19,915	34,325	38,530
Glen Ridge	216	235	235
Golf	50	110	114
Golfview	201	210	205
Greenacres City	1,731	8,843	16,614
Gulf Stream	408	475	481
Haverhill	1,034	1,249	1257
Highland Beach	624	2,030	2354
Hypoluxo	336	537	773
Juno Beach	747	1,142	1241
Jupiter	3,136	9,868	13,274
Jupiter Inlet Colony	396	378	400
Lake Clarke Shores	2,328	3,174	3,184
Lake Park	6,995	6,909	6,900
Lake Worth	23,714	27,048	27,066
Lantana	7,126	8,048	8,355
Manalapan	205	329	348
Mangonia Park	827	1,419	1,377
North Palm Beach	9,035	11,344	12,005
Ocean Ridge	1,074	1,355	1,438
Pahokee	5,663	6,346	6,363
Palm Beach	9,086	9,729	10,391
Palm Beach Gardens	6,102	14,407	17,673
Palm Beach Shores	1,214	1,232	1,243
Palm Springs	4,340	8,166	9,146
Riviera Beach	21,401	26,596	26,634
Royal Palm Beach	475	3,423	4,712
South Bay	2,958	3,886	3,702
South Palm Beach	188	1,304	1,340
Tequesta	2,642	3,685	3,828
West Palm Beach	57,375	62,530	64,090
Total Incorporated	255,154	363,904	393,070
UNINCORPORATED	93,839	209,221	244,862
TOTAL COUNTY	348,993	573,125	637,940



## II

### METEOROLOGY

Topography is of primary importance whenever the meteorological aspects of a given region are to be evaluated. Palm Beach County is a fairly level region. For the most part, Palm Beach County is between 10 and 20 feet above sea level. All urban development is located along the eastern 15 miles of the coastal strip. Most of the western portions of the County are covered by agricultural lands or everglades.

The agricultural lands are endowed with a rich peatlike "muck" soil. The Atlantic Ocean borders the eastern edge of the County and the Gulf stream flows northward approximately 3 miles off-shore. Seldom does a cold air mass reach this region without being modified due to marine influences and our southern location. Light freezes occur infrequently along the coastal areas of the County and more frequently in the everglades and agricultural areas. The most eastern parts of the County come under the influence of the sea breeze during the day and land breeze during the night. Based on weather data accumulated at Palm Beach International Airport (Table 2), August is the warmest month with a mean of 82.7°F, a maximum mean of 90.6°F, and minimum mean of 74.7°F. From the same data, January is the coldest month with a mean of 65.9°F, a maximum mean of 75.1°F and a minimum mean of 56.7°F. Rain showers and/or thunderstorms of short duration are frequent during the summer season. Palm Beach County receives the greatest amount of rainfall during the summer and fall. As indicated in Table 2, the County receives an average 60.9 inches of rain per year.

Palm Beach County can be classified as a semitropical region. The Quasi - permanent location of the "Bermuda" high pressure area governs our weather. It causes our prevailing easterly surface winds in addition to supplying the warm

moist air necessary to produce the frequent air mass, frontal or nocturnal rain-showers and/or thunderstorms that occur in the County..

The position of the "Bermuda" high pressure area is also conducive to the formation of an atmosphere capable of causing high pollution days. This atmosphere can easily occur if cold air from the north moves underneath the warm moist air brought into the County by the "Bermuda" high. The result is a temperature inversion or increase of temperature with height which traps the pollutants in the lower levels.

Meteorological parameters play a significant role in understanding the over-all air pollution cycle. The motions of the atmosphere are extremely variable and must be thoroughly examined in order to determine the movement and dispersement of pollutants. Both wind direction and wind speed are of primary importance. The surface wind and the wind found in the first few hundred feet of our atmosphere must be studied to determine diffusion and movement of the pollutants. The wind direction is indicative of the direction of travel of the pollutants. The wind speed determines the time it takes the pollutants to travel to a receptor and is a function of the amount of dilution of pollutant. Light winds, coupled with other factors, contribute to poor air quality episodes. U.S. Weather Service records of Palm Beach International Airport show the prevailing wind directions for the months of February through November are from one of the easterly headings. Mean monthly speeds vary between 7.6 mi/hr in August and 10.9 mi/hr in April (Table 2). The wind direction and speed for 1982 (Table 3) taken at our continuous monitoring site in West Palm Beach shows that a higher percentage of winds were from the east-northeast, east, or east southeast directions and the majority of the wind speeds were in the 4-10 mi/hr category. Table 4 & Table 5 wind direction and speed, for our Royal Palm Beach & 20 Mile Bend ozone sites (NAMS) are included in this section for information purposes.



TABLE 2  
PALM BEACH INTERNATIONAL AIRPORT  
METEOROLOGICAL MEANS

MONTH	MEAN MAXIMUM TEMPERATURE	MEAN MINIMUM TEMPERATURE	MEAN MONTHLY TEMPERATURE	MEAN MONTHLY PRECIP. (IN)	PREVAILING WIND DIRECTION	MEAN WIND SPEED (mi/hr)
JANUARY	75.1	56.7	65.9	2.64	NW	9.9
FEBRUARY	76.0	56.7	66.4	2.41	SE	10.3
MARCH	79.4	61.0	70.2	2.93	SE	10.8
APRIL	82.7	65.3	74.0	3.47	E	10.9
MAY	86.0	69.3	77.7	5.76	ESE	9.7
JUNE	88.7	72.6	80.7	7.89	ESE	8.1
JULY	90.4	74.3	82.4	6.37	ESE	7.5
AUGUST	90.6	74.7	82.7	6.52	ESE	7.6
SEPTEMBER	88.7	74.3	81.5	9.53	ENE	8.6
OCTOBER	84.8	70.4	77.6	7.74	ENE	10.0
NOVEMBER	79.9	63.9	71.9	3.14	ENE	10.1
DECEMBER	76.4	58.8	67.6	2.48	NNW	9.9
YEARLY	83.2	66.5	74.9	60.88	ESE	9.5

TABLE 3  
SITE #1 - West Palm Beach  
WIND DIRECTION AND SPEED (MI/HR) OCCURRENCES  
1982

DIRECTION	1-3	4-6	7-10	11-16	17-21	≥ 22	TOTAL	PERCENT
346 - 15 (N)	214	154	67	14	0		449	5.88
16 - 45 (NNE)	62	78	150	65	1		356	4.66
46 - 75 (ENE)	102	255	285	69	1		712	9.33
76 - 105 (E)	142	419	474	90	0		1125	14.74
106 - 135 (ESE)	193	448	339	74	0		1054	13.80
136 - 165 (SSE)	174	508	430	41	0		1153	15.10
166 - 195 (S)	143	237	166	34	1		581	7.61
196 - 225 (SSW)	157	133	78	25	3		396	5.19
226 - 255 (WSW)	165	111	43	17	6		342	4.48
256 - 285 (W)	183	74	26	11	1		295	3.86
286 - 315 (WNW)	216	92	40	5	0		353	4.62
316 - 345 (NNW)	270	157	77	10	0		514	6.73
CALM	305						305	4.00
TOTAL	2326	2666	2175	455	13	0	7635	
PERCENT	30.46	34.92	28.49	5.96	0.17			100.00

TABLE 4  
SITE #21 - ROYAL PALM BEACH  
WIND DIRECTION AND SPEED (MI/HR) OCCURRENCES  
1982

DIRECTION	1-3	4-6	7-10	11-16	17-21	$\geq 22$	TOTAL	PERCENT
346 - 15 (N)	27	2	0	0			29	0.64
16 - 45 (NNE)	57	5	0	0			62	1.38
46 - 75 (ENE)	136	10	1	0			147	3.26
76 - 105 (E)	386	133	14	0			533	11.82
106 - 135 (ESE)	366	185	40	0			591	13.11
136 - 165 (SSE)	239	114	55	1			409	9.07
166 - 195 (S)	128	37	20	10			195	4.33
196 - 225 (SSW)	70	10	3	0			83	1.84
226 - 255 (WSW)	82	8	1	0			91	2.02
256 - 285 (W)	95	21	5	4			125	2.77
286 - 315 (WNW)	233	49	10	1			293	6.50
316 - 345 (NNW)	125	18	3	0			146	3.24
CALM	1806						1806	40.01
TOTAL	3750	592	152	16	0	0	4510	
PERCENT	83.15	13.13	3.37	.35				100.00



TABLE 5  
SITE #16 - 20 MILE BEND  
WIND DIRECTION AND SPEED (MI/HR) OCCURRENCES  
1982

DIRECTION	1-3	4-6	7-10	11-16	17-21	≥ 22	TOTAL	PERCENT
346 - 15 (N)	205	73	24	3	0		305	3.89
16 - 45 (NNE)	330	133	87	5	0		555	7.07
46 - 75 (ENE)	322	160	147	27	3		659	8.40
76 - 105 (E)	285	235	174	21	0		715	9.11
106 - 135 (ESE)	522	251	177	15	0		965	12.30
136 - 165 (SSE)	458	212	123	21	0		814	10.37
166 - 195 (S)	194	107	74	21	1		397	5.05
196 - 225 (SSW)	175	70	21	11	1		278	3.54
226 - 255 (WSW)	159	50	8	6	0		223	2.84
256 - 285 (W)	74	30	20	6	0		130	1.66
286 - 315 (WNW)	148	81	28	11	1		269	3.43
316 - 345 (NNW)	357	99	51	19	0		526	6.70
CALM	2012						2012	25.64
TOTAL	5241	1501	934	166	6	0	7848	
PERCENT	66.78	19.13	11.90	2.11	0.08			100.00

### III

#### TECHNICAL STUDIES

##### INTRODUCTION

The ambient air monitoring program in Palm Beach County during the year 1982 consisted of the following:

Total Suspended Particulate - 10 Sites

Total Gravimetric

Continuous Gaseous Monitoring - 4 Sites

Site 1

Nitrogen Dioxide

Carbon Monoxide

Site 22

Sulfur Dioxide

Sites 16 & 21

Ozone

Continuous Meteorological Monitoring - 4 Sites

Site 1

Wind Speed

Wind Direction

Temperature

Relative Humidity

Sites 16 & 21

Wind Speed

Wind Direction

Site 15

Temperature Inversion Monitoring

Microscopic Morphology

All criteria pollutant data collected is reported monthly to the Department of Environmental Regulation and to the Environmental Protection Agency for inclusion in air quality data banks (SAROAD). Gaseous pollutant levels and meteorological conditions from one site are relayed by data line to the agency's office data acquisition system. Instantaneous levels of these parameters are available at all times. One, three, eight and twenty-four hour averages are calculated and recorded.

Locations of the monitoring sites are shown in Figure 1 . Table 6 gives site identification numbers, addresses, and parameters measured for all monitoring sites within the County. Table 7 relates measured air quality within Palm Beach County for the year 1982 to the Federal and State Ambient Air Quality Standards.

#### PERMANENT MONITORING NETWORK

The original monitoring network for suspended particulate sites, one through eight, was established in 1969 (Site 1A excluded). The Military Trail intercept line, sites nine through twelve, was added in 1972. Six of these twelve stations have been maintained as suspended particulate monitoring sites through the report period.

Periodic automated monitoring of sulfur dioxide, nitrogen dioxide and total oxidants (sites 1 through 8) was begun in June of 1971. Total hydrocarbon monitoring was begun in May of 1972 and discontinued in August of 1981. The automated gaseous and meteorological monitoring equipment were installed in the West Palm Beach monitoring station (Site 1) in November of 1972. Original Technicon Monitoring equipment for nitrogen dioxide, sulfur dioxide and total oxidants was replaced during the third quarter of 1973. Total oxidant monitoring was replaced by ozone monitoring at this time. Site 1 was maintained as the central monitoring station for gaseous pollutants, T.S.P., and meteorological parameters until March 1978, when the ozone monitor was relocated in Royal Palm Beach



(Site 21). A second rural ozone monitor was placed on line in January 1980 at the South Florida Water Management Pump Station (Site 16) in accord with the National Air Monitoring Stations (NAMS) network. Relocation of the SO<sub>2</sub> monitoring site to Riviera Beach (Site 22), in July 1980, completed the State and Local Air Monitoring Stations (SLAMS) network. Network design is summarized in Table 8.

A special study of sulfur dioxide levels and meteorological parameters was conducted in Belle Glade (Site 8), from September of 1972 until May 1978.

Two manual stations for the measurement of nitrogen dioxide were established in November 1973 and maintained until October of 1978 as required by the State Implementation Plan. Manual sulfur dioxide stations have been operated periodically as part of special study projects.

#### PARTICULATE MONITORING

Methodology: Standard High volume samplers and shelters are located at each of the ten sites. Samples are collected and handled in accordance with Referenced Method for the Determination of Suspended Particulates in the Atmosphere (High Volume Method), Federal Register, Vol. 36, No.84 - Friday, April 30, 1971. Sampling time is twenty-four hours, running from midnight to midnight, for each sampling date. The standard six day schedule as recommended by EPA is followed.

Tabulated results for suspended particulate for the year 1982 are presented in tables 9 and 10. Figure 2 presents the range of probable logarithmic values for suspended particulate at all ten stations for the years 1981 and 1982. A historical summation for total suspended particulate measurements from 1969 to the presented in Table 11.

#### GASEOUS MONITORING

Maximum ambient air concentrations for gaseous sampling in Palm Beach County for the period 1970-1982 are presented in Table 12.

#### NITROGEN DIOXIDE (SLAMS)

Continuous automatic monitoring for this pollutant is carried on at Site 1.

A MEC Model 1200 NO-NO<sub>x</sub> (McMillan Electronics Corporation) Chemiluminescence analyzer was in use from November 15, 1973 until December 27, 1977. At this time it was replaced by Monitor Laboratory Model 8440. Table 13 presents monthly and annual sampling time, arithmetic means and twenty-four hour maximum concentrations. Table 14 includes quarterly and annual, one, eight and twenty-four hour concentration maximums, annual arithmetic means and the frequency distribution of ranges of pollutant levels recorded. Values recorded placed the measured concentrations of this pollutant well below those of the Ambient Air Quality Standards. The NO<sub>2</sub> monitor was taken off line returned to the factory for repairs on May 18. It could not be returned to service until October 6. D.E.R. was unable to make NO<sub>2</sub> accuracy audits during the portion of the year the monitor was on line. Consequently, there is no accuracy data available for this pollutant. Precision and completeness for the year are as follows:

Precision: -15 to 21%

Completeness 45%

#### CARBON MONOXIDE (SLAMS)

This pollutant is monitored continuously at Site 1. A Mine Safety Appliances, Model 200 nondispersive infrared spectrophotometric automatic analyzer, in service since January 1971, was retired and replaced by a Model 202-S on October 6, 1977. Table 15 presents a monthly record of sampling hours, one and eight hour maximums, and relates concentration maximums to the Ambient Air Quality Standard. There were no recorded values in excess of the one hour or eight hour standards during the reported period.

Table 16 presents quarterly, one and eight hour maximum values and frequency distribution of all recorded pollutant levels. Accuracy, precision and completeness for the year are as follows:

## Accuracy

Concentration Range	Accuracy Range
3 - 8 ppm	+1 to 12
15 - 20 ppm	+4 to 8
40 - 45 ppm	-1 to 5
Precision: -16 to 11	
Completeness: 92%	

## OZONE (NAMS)

This pollutant was monitored continuously at Site 1 from September 6, 1973 thru 1978. The instrumentation is a MEC Model 1100 (McMillan Electronic Corporation) Chemiluminescence analyzer. In 1978 the instrument was modified by the manufacturer to EPA designated reference method status. The monitor was relocated to Royal Palm Beach, Site 21, and placed in service there March 1, 1979.

In January, 1980 a Monitor Labs Model 8410 ozone monitor, went on line at the South Florida Water Management Pump Station (Site 16). This completed the EPA mandated NAMS ozone monitoring network for Palm Beach County.

The Dasibi Model #1003 PC, which had functioned as the calibration system since December, 1978 was reassigned to transfer calibrator status in 1980 in conjunction with a Columbia Scientific Photocal 3000 primary standard.

Tables 17 and 19 present a monthly record of hours sampled and one hour maximum recorded at each site. There were no values recorded which exceed the Federal Ambient Air Quality Standard for this pollutant.

One, eight and twenty-four hour maximum and the frequency distribution for all pollutant levels recorded are presented on a quarterly basis in Tables 18 and 20.

The February 8, 1979 Federal Register revised the Federal primary standard for ozone. The Standard changed from an average hourly levels of 0.08 parts per million not to be exceeded more than one hour a year to a statistical



determination when "the expected number of days per calendar year with maximum hourly average concentrations above 0.12 parts per million is equal to or less than one."

Tables 21 and 22 give the design values or expected maximum hourly averages for these sites based on yearly data and on last three years data Wiebull distributions. No credit is given for "seasonal free days" in these calculations. Accuracy precision and completeness for the year are as follows:

Accuracy	
Concentration Range	Accuracy Range
0.08 - 0.10 ppm	-17 to 10
0.15 - 0.10 ppm	-23 to 8
0.40 - 0.45 ppm	-19 to 4

Precision: -8 to 10

Completeness: 94%

## SULFUR DIOXIDE (SLAMS)

Monitoring instrumentation is a Monitor Labs Model 8850 Fluorescent monitor which replaced the Beckman 904-A Sulfur Dioxide analyzer, based on coulometric titration.

Site 22, located in Riviera Beach was established in July, 1980 to monitor sulfur dioxide levels in the coastal region of the County. Table 23 reports a monthly history of hours sampled, one, three, and twenty-four hour maximums, and the number of violations for each of the related standards. Table 24 presents quarterly and annual maximum values and a frequency distribution of values recorded. Calculation of an arithmetic mean for this pollutant is not feasible because ninety-six percent of the values are below the limit of sensitivity for the instrument. Precision, accuracy and completeness for the year are as follows:

### Accuracy

Concentration Range	Accuracy Range
0.03 - 0.08 ppm	-8 to 5
0.15 - 0.20 ppm	-7 to 14
0.40 - 0.45 ppm	-2 to 13

Precision: -15 to 6

Completeness: 88%

TABLE 6  
MONITORING SITE LOCATIONS

SITE NO.	ADDRESS	UTM ZONE 17	MONITORING CAPABILITY
1	West Palm Beach Water Treatment Plant First Street and Tamarind Ave. West Palm Beach, Florida	2955030N 0593232E	CO, NO <sub>2</sub>  Meteorology
1A	Palm Beach County Health Department 901 Evernia Street West Palm Beach, Florida	2955030N 0593232E	Susp. Part.
2	Tequesta Water Department 357 Tequesta Drive Tequesta, Florida	2982018N 0589963E	Discontinued December 27, 1977
3	North Palm Beach Water Treatment Plant 603 Anchorage Drive North Palm Beach, Florida	2965817N 0592780E	Susp. Part.
4	Lake Worth Water Treatment Plant 301-303 College Street Lake Worth, Florida	2943537N 0592793E	Susp. Part.
5	Delray Beach Water Treatment Plant 202 N.W. 1st Avenue Delray Beach, Florida	2927488N 0592195E	Susp. Part.
6	Boca Raton Fire Station #1 1151 N. Federal Highway Boca Raton, Florida	2915768N 05913137E	Susp. Part.
7	Royal Palm Beach Golf Course Royal Palm Beach Boulevard Royal Palm Beach, Florida	2951437N 0578767E	Discontinued March 27, 1978
8	Belle Glade Water Treatment Plant 1016 West Canal Street Belle Glade, Florida	2953082N 0533160E	Discontinued October 29, 1978
9	Grammercy Park Water Treatment Plant Park Avenue Grammercy Park, Florida	2960537N 0587329E	Discontinued February 1, 1977



TABLE 6

## MONITORING SITE LOCATIONS (CONT'D)

SITE NO.	ADDRESS	UTM ZONE 17	MONITORING CAPABILITY
10	Southwest Fire Department 1180 S. Military Trail West Palm Beach, Florida	2949018N 0588207E	Susp. Part.
11	St. Vincent DePaul Seminary S. Military Trail Boynton Beach, Florida	2932890N 0586927E	Discontinued July 17, 1976
12	College of Boca Raton S. Military Trail Boca Raton, Florida	2918354N 0587320E	Susp. Part.
13	NO <sub>x</sub> SIP Site N8 Florida Atlantic University Boca Raton, Florida	2917000N 0589500E	Discontinued October 1, 1978
14	NO <sub>x</sub> SIP Site N9 Palm Beach Mall Palm Beach Lakes Boulevard West Palm Beach, Florida	2956000N 0590700E	Discontinued October 1, 1978
15	Division of Forestry Lat. 26° 41'N, Long 80° 16'E Loxahatchee, Florida		Temperature Inversion
16	South Florida Water Management Pump Station Twenty Mile Bend State Road 80	2951402N 0562879E	O <sub>3</sub> Susp. Part. Meteorology
17	Lake Harbor Water Treatment Plant Lake Harbor, Florida	2952230N 0518600E	Discontinued December 27, 1977
18	Pahokee Health Department 1759 E. Main Street Pahokee, Florida	2967222N 0533760E	Discontinued November 1, 1978
19	Belle Glade Fire Station 22 W. Avenue "A" Belle Glade, Florida	2951420N 0532900E	Susp. Part.
20	Pahokee Sewage Treatment Plant 1050 McClure Road Pahokee, Florida	2964200N 0532300E	Susp. Part.

TABLE 6  
MONITORING SITE LOCATIONS (CONT'D)

SITE NO.	ADDRESS	UTM ZONE 17	MONITORING CAPABILITY
21	Royal Palm Beach R. V. Area 10999 Okeechobee Boulevard Royal Palm Beach, Florida	2954150N 0578100E	O <sub>3</sub> , Meteorology
22	Palm Beach County Health Department Warehouse 2030 Avenue L Riviera Beach, Florida	296235N 059248E	SO <sub>2</sub>

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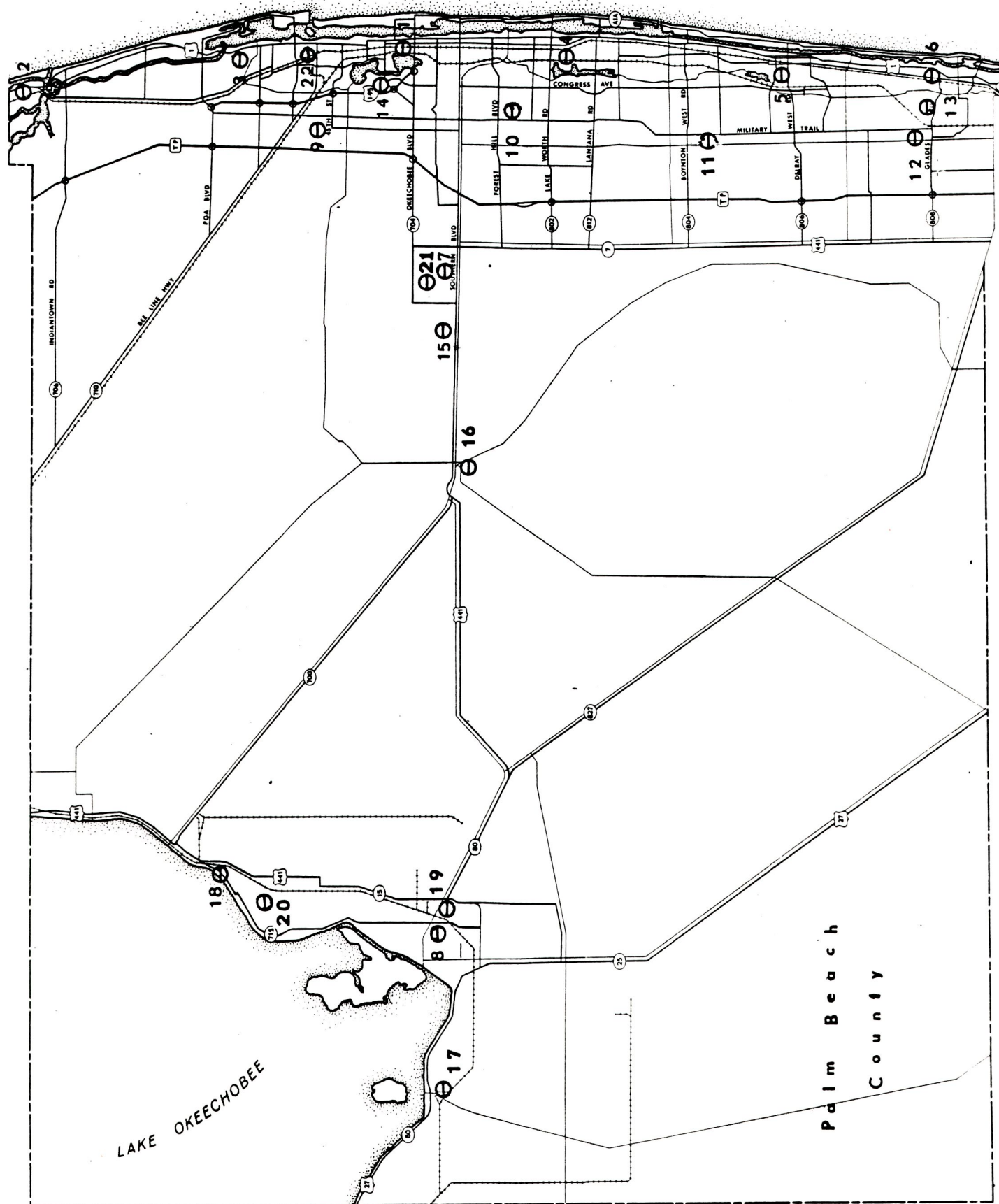


Figure 1 Ambient Air Monitoring Network



TABLE 7  
AMBIENT AIR QUALITY STANDARDS

POLLUTANT	FEDERAL PRIMARY	FEDERAL SECONDARY	STATE	MEASURED LEVELS PALM BEACH COUNTY PPM see table #			
Suspended Particulates				Site	Site	Site	Site
Annual Geo. Mean	75 ug/m <sup>3</sup>	60 ug/m <sup>3</sup>	60 ug/m <sup>3</sup>	1	16	21	22
Maximum 24 hr. Conc. (2)	260 ug/m <sup>3</sup>	150 ug/m <sup>3</sup>	150 ug/m <sup>3</sup>				
Sulfur Oxides							
Annual Arith. Mean	80 ug/m <sup>3</sup> (0.03 ppm)		60 ug/m <sup>3</sup> (0.02 ppm)				0.003
Maximum 24 hr. Conc.	365 ug/m <sup>3</sup> (0.14 ppm)		260 ug/m <sup>3</sup> (0.1 ppm)				0.019
Maximum 3 hr. Conc. (2)		1,300 ug/m <sup>3</sup> (0.5 ppm)	1,300 ug/m <sup>3</sup> (0.5 ppm)				0.053
Carbon Monoxide							
Maximum 8 hr. Conc. (2)	10 mg/m <sup>3</sup> (9 ppm)	Same as Federal Primary	Same as Federal Primary	8.1			
Maximum 1 hr. Conc.	40 mg/m <sup>3</sup> (35 ppm)			21.3			
Ozone							
Daily Maximum 1 hr. Conc. (1)	235 ug/m <sup>3</sup> (0.12 ppm)	Same as Federal Primary	Same as Federal Primary		.080	.122	
Nitrogen Oxides							
Annual Arith. Mean	100 ug/m <sup>3</sup> (0.05 ppm)	Same as Federal Primary	Same as Federal Primary	0.038			

1. The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is equal to or less than 1.
2. Concentration limits not to be exceeded more than once per year.

TABLE 8  
PALM BEACH COUNTY  
NETWORK DESCRIPTION  
NAMS, SLAMS AND SPECIAL PURPOSE

URBAN AREA	SITE ADDRESS	NETWORK	SAROAD SITE #	SAMPLER	ANALYSIS	POLLUTANT	MON.OBJ.	SPATIAL SCALE	OPE.SCHEDULE	IMPLIM.SCHE
Belle Glade	22 W. Ave. A	SLAMS	0240-003-G01	Hi Vol	Gravimetric	TSP	Max.Conc.	Neighborhood	6 day	Operational
Boca Raton	1151 N.Fed.Hwy.	SLAMS	0280-001-G01	Hi Vol	Gravimetric	TSP	P.P. Exp.	Neighborhood	6 day	Operational
Boca Raton	S. Military Trail	SLAMS	0280-002-G01	Hi Vol	Gravimetric	TSP	P.P. Exp.	Neighborhood	6 day	Operational
Delray Beach	202 NW 1st Ave.	SLAMS	1000-002-G01	Hi Vol	Gravimetric	TSP	Max.Conc.	Neighborhood	6 day	Operational
Lake Worth	301 College St.	SLAMS	2220-001-G01	Hi Vol	Gravimetric	TSP	Max.Conc.	Neighborhood	6 day	Operational
N.Palm Beach	603 Anchorage Dr.	SLAMS	3060-001-G01	Hi Vol	Gravimetric	TSP	P.P. Exp.	Neighborhood	6 day	Operational
W.Palm Beach	1108 S.Military Trail	SLAMS	3420-005-G01	Hi Vol	Gravimetric	TSP	P.P. Exp.	Neighborhood	6 day	Operational
Rural	20 Mile Bend Rd.	NAMS	3120-006-G03	Monitor Lab 8440	Chemilum	O <sub>3</sub>	Max.Conc.	Urban	cont.	Operational
Rural	10999 Okeechobee Blvd.	NAMS	3420-007-G01	M/C 1100-1	Chemilum	O <sub>3</sub> (EE)	P.P. Exp.	Neighborhood	cont.	Operational
Riviera Beach	2030 Ave. "L"	SLAMS	3840-003-G02	Monitor Lab 8850	Fluorescent	SO <sub>2</sub>	Max.Conc.	Neighborhood	cont.	Operational
W.Palm Beach	1st St. & Tamarind Ave.	SLAMS	4760-001-G01	Monitor Lab 8440	Chemilum	NO <sub>2</sub>	Max.Conc.	Neighborhood	cont.	Operational
W.Palm Beach	901 Evernia St.	SLAMS	4760-003-G01	Hi Vol	Gravimetric	TSP	Max.Conc.	Neighborhood	6 day	Operational
W.Palm Beach	1st St. & Tamarind Ave.	SLAMS	4760-001-G01	MSA 202-S	Nondispersive Infrared	CO	Max.Conc.	Neighborhood	cont.	Operational
Rural	Twenty Mile Bend	S.P.	3120-006-G01	Hi Vol	Gravimetric	TSP	Max.Conc.	Neighborhood	6 day	Operational
Pahokee	1050 McClure Rd.	S.P.	3340-001-G01	Hi Vol	Gravimetric	TSP	Max.Conc.	Neighborhood	6 day	Operational

TABLE 9  
SUSPENDED PARTICULATE MATTER, 1982

Site No.	Geometric Mean. ug/m <sup>3</sup>					Geo. Std. Dev.	% Above or below Annual Standard (60 ug/m <sup>3</sup> )	24 Hr. Max. in ug/m <sup>3</sup>	No of Samples Above Daily Standard (150 ug/m <sup>3</sup> )	Total No. of Samples Collected
	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Annual					
1A	38.0	37.3	28.6	30.5	33.2	1.45	-44.67	72	-0-	59
3	29.7	30.6	21.9	24.7	26.4	1.49	-56.0	59	-0-	58
4	45.2	38.2	29.4	30.8	35.1	1.53	-41.5	121	-0-	58
5	37.8	39.8	29.4	29.4	33.2	1.43	-44.67	76	-0-	55
6	42.2	36.5	26.0	29.8	32.6	1.47	-45.67	70	-0-	55
10	40.1	39.1	32.0	33.9	36.2	1.40	-39.67	72	-0-	57
12	30.3	28.4	22.6	19.5	25.0	1.52	-58.33	62	-0-	57
16	29.8	25.5	20.6	19.8	23.5	1.60	-60.83	128	-0-	61
19	56.7	47.2	36.1	43.0	45.1	1.41	-24.83	87	-0-	61
20	41.2	40.6	35.8	36.7	38.6	1.52	-35.67	85	-0-	57



TABLE 10  
TOTAL SUSPENDED PARTICULATES - 1982

SITE NO.	NUMBER OF SAMPLES													CONCENTRATION ug/m <sup>3</sup>					GEOM. STD. DEV.
	J	F	M	A	M	J	J	A	S	O	N	D	TOTAL	MAX	2nd MAX	MIN	ARITH. MEAN	GEOM. MEAN	
1A	4	5	5	5	5	4	5	5	5	5	5	6	59	72	60	11	35.3	33.2	1.45
3	5	5	4	5	4	5	5	5	5	5	5	5	58	59	59	12	28.4	26.4	1.49
4	5	5	3	5	5	5	5	5	4	5	5	6	58	121	95	14	38.2	35.1	1.53
5	5	2	3	5	4	5	5	5	5	5	5	6	55	76	58	16	35.4	33.2	1.43
6	5	4	4	4	3	5	4	5	5	5	5	6	55	70	69	15	27.8	32.6	1.47
10	4	5	5	5	5	5	5	4	5	5	5	4	57	72	70	17	38.2	36.2	1.40
12	5	5	5	5	5	5	5	5	3	4	5	5	57	62	56	10	27.3	25.0	1.52
16	5	5	5	5	5	5	5	5	5	5	5	6	61	128	50	9	26.5	23.5	1.60
19	5	5	5	5	5	5	5	5	5	5	5	6	61	87	81	16	47.8	45.1	1.41
20	5	5	5	5	5	4	4	5	5	5	4	5	57	85	79	12	41.8	38.6	1.52

FIGURE 2

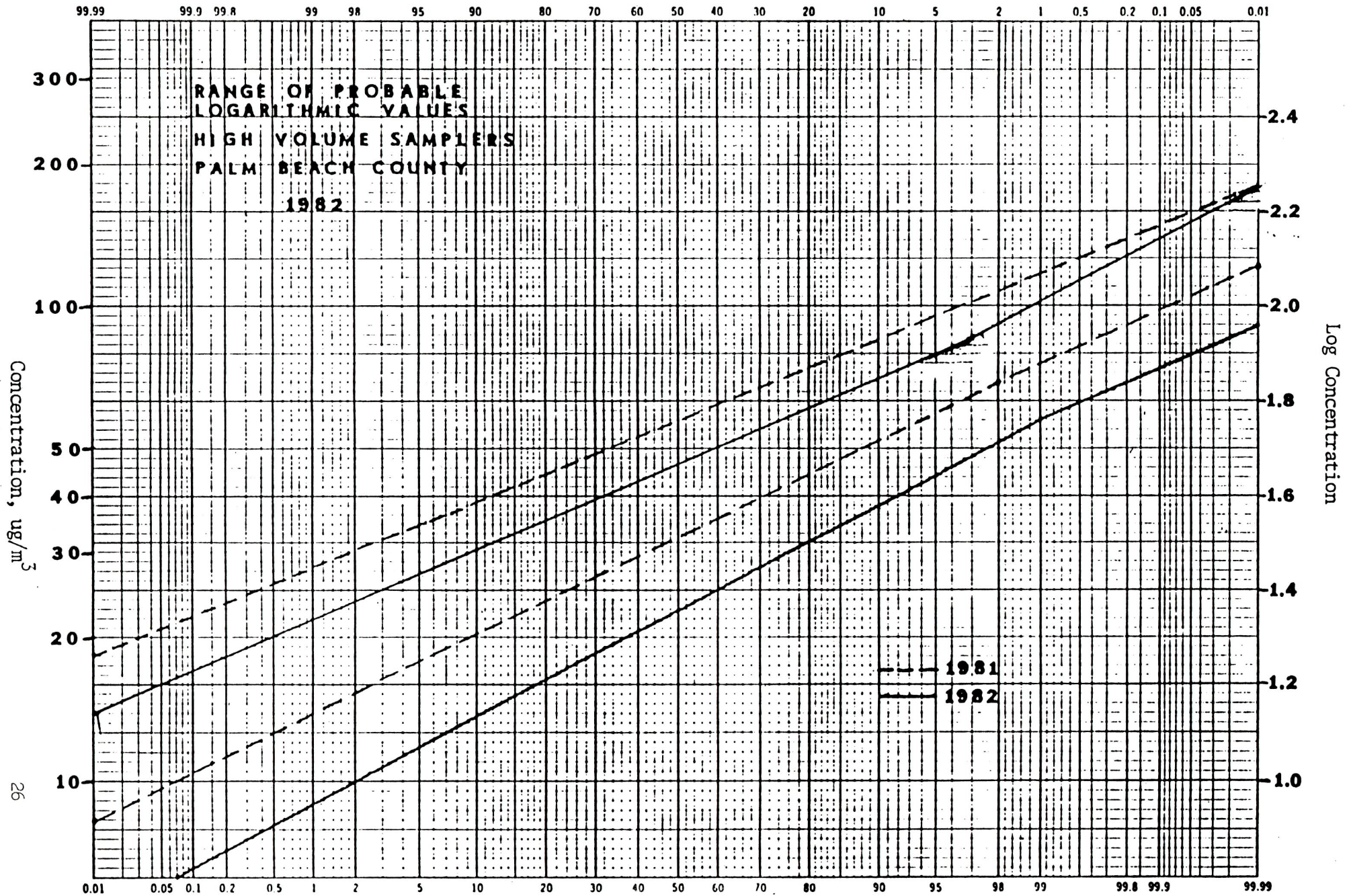




TABLE 11  
TOTAL SUSPENDED PARTICULATE ug/m<sup>3</sup>  
1969-1982

Site No.	Parameter	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
1/1A	Maximum	109.3	115.7	121.1	133.6	101.9	96.4	81.5	106.2	172	92	88	78	119	72
	Minimum	9.6	13.9	15.2	15.2	10.8	19.6	20.0	15.8	17	18	18	22	20	11
	Arith. Mean	48.7	40.9	58.7	49.9	40.5	40.9	44.7	37.4	42.0	41.3	41.0	43.9	49.4	35.3
	Geo. Mean	43.9	39.5	53.4	45.9	38.0	38.8	42.4	35.3	38.3	38.2	38.5	42.2	45.8	33.2
	Geo. Std. Dev.	1.56	1.42	1.19	1.49	1.49	1.38	1.39	1.41	1.50	1.47	1.44	1.34	1.48	1.45
2	Maximum	71.2	74.3	122.3	112.3	85.4	104.0	77.7	63.1	74					
	Minimum	7.3	13.3	10.7	12.2	5.3	19.6	11.9	14.0	12					
	Arith. Mean	26.9	30.4	34.6	33.0	33.6	32.4	36.4	35.5	33.6					
	Geo. Mean	24.6	28.3	30.8	30.3	31.4	30.6	34.1	33.4	30.9					
	Geo. Std. Dev.	1.51	1.45	1.61	1.48	1.49	1.36	1.45	1.44	1.50					
3	Maximum	71.8	82.3	167.5	94.8	133.2	132.7	91.8	67.8	62	65	85	90	115	59
	Minimum	7.7	1.3	0.4	12.8	16.6	16.1	14.6	10.3	11	12	14	20	17	12
	Arith. Mean	32.2	31.7	40.6	37.0	38.2	35.8	38.3	31.4	30.4	32.1	37.8	41.5	42.6	28.4
	Geo. Mean	29.5	28.4	30.7	33.7	35.3	32.2	34.5	29.1	28.4	30.2	35.3	39.2	39.0	26.4
	Geo. Std. Dev.	1.63	1.76	2.93	1.49	1.47	1.54	1.61	1.50	1.45	1.42	1.47	1.41	1.53	1.49
4	Maximum	351.9	224.8	95.6	89.8	85.6	196.8	435.3	81.0	84	85	101	90	123	121
	Minimum	7.3	8.0	10.2	12.9	13.3	18.3	19.6	12.7	14	17	20	9	25	14
	Arith. Mean	32.9	30.9	37.2	34.8	37.7	45.2	57.1	38.2	41.0	44.6	44.7	47.8	49.0	38.2
	Geo. Mean	26.4	28.2	31.7	32.2	35.3	38.8	47.9	35.8	39.1	42.1	42.0	45.0	45.3	35.1
	Geo. Std. Dev.	1.78	1.47	1.85	1.49	1.39	1.67	1.64	1.44	1.38	1.41	1.43	1.46	1.48	1.53
5	Maximum	164.9	76.7	142.4	108.0	92.9	81.9	83.5	61.1	81	99	102	82	122	76
	Minimum	13.3	8.3	12.2	15.9	10.9	13.8	22.0	13.8	18	17	19	26	21	16
	Arith. Mean	40.1	36.2	36.4	38.5	40.0	34.8	42.0	35.8	39.1	37.6	40.4	42.7	46.2	35.4
	Geo. Mean	38.8	33.6	32.0	35.4	37.6	32.2	39.5	34.0	37.0	35.0	37.6	41.1	42.5	33.2
	Geo. Std. Dev.	1.47	1.49	1.64	1.49	1.46	1.53	1.41	1.40	1.41	1.45	1.47	1.33	1.5	1.43



TABLE 11  
TOTAL SUSPENDED PARTICULATE ug/m<sup>3</sup>  
1969-1982

Site No.	Parameter	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
6	Maximum	83.1	80.1	237.9	275.3	106.5	92.4	114.8	62.8	79	107	124	94	131	70
	Minimum	9.5	9.6	13.3	17.0	13.6	20.9	22.4	16.4	15	18	19	26	25	15
	Arith. Mean	36.4	33.5	49.1	44.9	43.1	41.6	45.4	35.6	39.3	42.2	47.3	47.0	48.6	27.8
	Geo. Mean	32.9	31.0	41.1	39.9	40.2	38.4	42.7	33.8	37.0	39.3	43.8	44.8	45.7	32.6
	Geo. Std. Dev.	1.60	1.48	2.09	1.56	1.46	1.26	1.43	1.38	1.43	1.45	1.48	1.37	1.42	1.47
7	Maximum	52.5	71.7	131.5	102.0	65.5	98.3	70.5	55.2	64	36				
	Minimum	7.2	2.1	1.6	7.0	9.1	5.4	11.4	6.2	9	17				
	Arith. Mean	23.6	25.8	30.7	31.8	28.1	25.6	33.0	23.1	24.3					
	Geo. Mean	21.5	23.3	24.4	28.3	26.2	22.3	30.4	21.0	22.5					
	Geo. Std. Dev.	1.57	1.59	2.13	1.37	1.45	1.66	1.52	1.55	1.49					
8	Maximum	175.7	273.9	222.7	173.3	151.0	210.9	199.4	125.2	149	143				
	Minimum	12.7	14.5	12.6	19.8	20.3	22.8	10.7	12.6	17	22				
	Arith. Mean	53.8	54.6	61.4	58.6	59.8	59.8	62.4	61.6	59.0	58.8				
	Geo. Mean	46.0	47.1	53.1	52.3	54.0	54.2	56.7	56.3	54.6	53.1				
	Geo. Std. Dev.	1.76	1.70	1.64	1.60	1.61	1.57	1.56	1.56	1.49	1.57				
9	Maximum				74.50	145.3	81.2	65.3	59.1	33					
	Minimum				13.30	11.7	11.3	16.1	9.6	20					
	Arith. Mean				31.2	33.2	29.9	34.1	28.2						
	Geo. Mean				28.7	30.7	27.0	32.2	26.3						
	Geo. Std. Dev.				1.42	1.45	1.50	1.39	1.46						
10	Maximum				94.80	109.0	113.0	81.7	101.6	98	77	80	87	122	72
	Minimum				18.30	19.0	21.0	23.4	12.8	19	21	18	23	19	17
	Arith. Mean				44.4	45.3	43.0	47.2	42.8	41.4	46.0	46.2	51.2	53.1	38.2
	Geo. Mean				41.6	42.5	39.0	45.4	40.5	39.2	43.6	43.3	48.9	48.4	36.2
	Geo. Std. Dev.				1.43	1.43	1.54	1.35	1.40	1.40	1.41	1.45	1.33	1.54	1.40

TABLE 11  
TOTAL SUSPENDED PARTICULATE ug/m<sup>3</sup>  
1969-1982

Site No.	Parameter	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
11	Maximum				69.9	77.8	134.3	299.9							
	Minimum				11.9	11.5	13.5	13.5	10.9						
	Arith. Mean				32.1	30.8	34.4	44.9							
	Geo. Mean				29.2	28.9	29.4	37.7							
	Geo. Std. Dev.				1.51	1.53	1.70	1.67							
12	Maximum				68.1	79.6	200.7	64.7	53.7	66	69	85	107	122	62
	Minimum				11.2	11.0	12.8	18.2	7.0	14	14	13	14	18	10
	Arith. Mean				29.6	31.7	34.9	34.2	26.9	29.8	29.0	35.0	38.5	40.8	27.3
	Geo. Mean				26.9	29.6	29.2	32.4	25.1	27.9	27.2	31.7	35.8	37.0	25.0
	Geo. Std. Dev.				1.54	1.43	1.70	1.39	1.47	1.43	1.43	1.56	1.54	1.55	1.52
16	Maximum								130.1	76	136	87	68	96	128
	Minimum								14.6	12	14	14	19	16	9
	Arith. Mean								35.0	30.9	31.5	37.3	34.2	43.4	26.5
	Geo. Mean								31.0	38.2	28.7	33.8	32.1	38.4	23.5
	Geo. Std. Dev.								1.60	1.52	1.50	1.57	1.44	1.66	1.60
17	Maximum									69					
	Minimum									10					
	Arith. Mean									34.6					
	Geo. Mean									31.6					
	Geo. Std. Dev.									1.53					
18/20	Maximum									63	76				
	Minimum									9	16				
	Arith. Mean										30.8				
	Geo. Mean										28.8				
	Geo. Std. Dev.										1.44				

TABLE 11  
TOTAL SUSPENDED PARTICULATE ug/m<sup>3</sup>  
1969-1982

Site No.	Parameter	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
19	Maximum										121	121	110	166	87
	Minimum										20	16	31	25	16
	Arith. Mean										52.9	57.5	58.9	62.7	47.8
	Geo. Mean										49.6	53.9	56.5	56.6	45.1
	Geo. Std. Dev.										1.45	1.45	1.34	1.57	1.41
20	Maximum											122	164	117	85
	Minimum											21	16	21	12
	Arith. Mean											50.6	52.0	55.6	41.8
	Geo. Mean											46.4	47.9	50.6	38.6
	Geo. Std. Dev.											1.52	1.48	1.56	1.52



TABLE 12  
GASEOUS SAMPLING  
MAXIMUM AMBIENT AIR CONCENTRATIONS, PPM  
1970-1982

Site No.	Sampling Dates	Sulfur Dioxide			Total Oxidants		O <sub>3</sub>	
		1 Hour	3 Hour	24 Hour	1 Hour	8 Hour	1 Hour	8 Hour
1	07/17-07/31/70	0.094	0.038	0.007	0.114	0.073	-	-
	04/12-04/27/71	0.044	0.028	> 0.006	> 0.188	> 0.130	-	-
	07/16-07/30/71	0.035	0.012	0.002	0.032	0.026	-	-
	11/14-12/31/72	0.023	0.021	0.003	> 0.187	> 0.040	-	-
	01/01-11/14/73	0.042	0.034	0.004	-	-	-	-
	11/14-12/31/73	0.015	0.008	0.001	-	-	-	-
	01/01-11/01/73				0.155	0.063		
	09/06-12/31/73						> 0.100	> 0.071
	01/01-12/31/74	0.075	0.052	0.023			0.077	0.055
	01/01-12/31/75	0.062	0.025	0.008	-	-	0.104	0.077
	01/01-12/31/76	0.055	0.034	0.021	-	-	0.148	0.122
	01/01-12/31/77	0.019	0.015	0.009	-	-	0.106	0.088
	01/01-12/31/78				-	-	0.075	0.066
	04/01-06/30/78	0.030	0.022	0.008	-	-	-	-
	01/01-10/22/79	0.024	0.017	0.016	-	-	-	-
2	06/16-07/02/70	0.035	0.026	0.010	0.104	0.093	-	-
	05/11-05/25/71	0.191	0.142	0.028	0.010	0.0004	-	-
	08/13-08/27/71	0.033	0.015	0.003	0.016	0.018	-	-
3	07/02-07/17/70	0.196	0.128	0.028	0.176	0.086	-	-
	04/27-05/11/71	> 0.500	0.324	0.060	0.111	0.055	-	-
	07/30-08/13/71	0.064	0.035	0.005	0.007	0.001	-	-
	05/18-06/30/72	0.053	0.032	0.006	0.116	0.071	-	-
	09/03-12/31/76	-	-	0.004	-	-	-	-
	01/01-12/31/77	-	-	0.004	-	-	-	-
4	07/31-08/14/70	0.031	0.024	0.010	0.129	0.089	-	-
	03/26-04/12/71	0.044	0.034	0.012	0.110	0.106	-	-
	09/23-10/04/71	0.080	0.035	0.006	0.056	0.048	-	-
	11/10-11/19/71	0.000	0.000	0.000	0.078	0.073	-	-

TABLE 12  
GASEOUS SAMPLING  
MAXIMUM AMBIENT AIR CONCENTRATIONS, PPM  
1970-1982 (continued)

Site No.	Sampling Dates	Sulfur Dioxide			Total Oxidants		O <sub>3</sub>
		1 Hour	3 Hour	24 Hour	1 Hour	8 Hour	
5	09/04-09/18/70 03/12-03/26/71 10/19-11/01/71 08/21-09/04/70 01/27-02/12/71 12/29-01/12/72 07/05-08/01/72 09/28-10/12/70 02/26-03/12/71 11/19-12/10/71 10/12-10/26/70 02/12-02/26/71 02/10-12/29/71 09/21/72-05/01/73 12/01/72-05/18/73 01/03-12/31/80 01/01-12/31/81 01/01-12/31/82	0.069 0.060 0.006 0.076 0.132 0.068 0.015 0.106 0.026 0.015 0.048 0.000 0.288 0.267 0.068 0.176 0.153 0.065 0.075 0.085 0.033 0.047	0.029 0.028 0.002 0.048 0.098 0.034 0.012 0.006 0.017 0.013 0.003 0.000 0.030 0.217 0.028 0.098 0.044 0.025 0.004 0.074 0.078 0.029 0.016	0.003 0.005 0.0003 0.013 0.003 0.006 0.003 0.006 0.003 0.003 0.001 0.000 0.030 0.039 0.007 0.044 0.113 0.031 0.074 0.051 0.016 0.043	0.092 0.013 0.136 0.048 0.110 0.000 0.050 0.076 0.110 0.038 0.078 0.103 0.012 0.006	0.066 0.086 0.101 0.037 0.095 0.000 0.027 0.068 0.093 0.016 0.061 0.076 0.012	.079 .110 .103 .122 0.073 0.074 0.081 0.098 0.095 0.080
16	01/03-12/31/80 01/01-12/31/81 01/01-12/31/82 09/27-12/31/76 01/01-12/31/77 03/01-12/31/79 01/01-12/31/80 01/01-12/31/81 01/01-12/31/82			0.003 0.003 0.003			.079 .110 .103 .122 0.073
17							
21							

TABLE 12  
GASEOUS SAMPLING  
MAXIMUM AMBIENT AIR CONCENTRATIONS, PPM  
1970-1982 (continued)

Site No.	Sampling Dates	Sulfur Dioxide			Total Oxidants		O <sub>3</sub>	
		1 Hour	3 Hour	24 Hour	1 Hour	8 Hour	1 Hour	8 Hour
22	07/24-12/31/80	0.016	0.014	0.013				
	01/01-12/31/81	0.034	0.031	0.019				
	01/01-12/31/82	0.067	0.053	0.019				

TABLE 12  
MAXIMUM AMBIENT AIR CONCENTRATION, PPM  
1970 - 1982

Site No.	Sampling Dates	NO <sub>2</sub>			CO		HC	
		1 Hour	8 Hour	Ar./Mean	1 Hour	8 Hour	1 Hour	8 Hour
1	07/17-07/31/70	0.097	0.068	0.016				
	04/12-04/27/71	0.147	0.079	0.026				
	07/16-07/30/71	0.067	0.056	0.018	3.6	3.1		
	11/14-12/31/72	0.092	0.079	0.020	7.0	3.7	6.5	3.2
	01/01-11/15/73	0.060	0.047	0.007				
	01/01-12/31/73				8.9	6.3	5.5	3.3
	01/01-12/31/74	0.080	0.052	0.015	10.5	8.8	5.8	4.4
	01/01-12/31/75	0.125	0.083	0.015	8.6	5.0	5.2	3.0
	01/01-12/31/76	0.083	0.054	0.009	10.5	5.2	5.3	3.7
	01/01-12/31/77	0.071	0.044	0.017	11.8	8.5	5.2	3.6
	01/01-12/31/78	0.089	0.070	0.012	8.6	4.5		
	10/18-12/31/78						5.8	3.2
	01/01-11/28/79	0.078	0.056	0.016				
	01/01-11/08/79				7.8	3.1		
	01/01-12/31/79						8.3	2.9
	01/01-12/31/80	0.137	0.088	0.018	9.8	5.7	9.6	6.2
	01/01-12/31/81	0.152	0.107	0.012	13.3	5.8		
	01/01-8/14/81						8.4	3.5
	01/01-12/31/82	0.069	0.053	0.038	21.3	8.1		
2	06/16-07/02/70	0.044	0.032	0.010				
	05/11-05/25/71	0.054	0.040	0.013	2.2	0.3		
	08/12-08/27/71	0.073	0.060	0.013	0.0	0.0		
3	07/02-07/17/70	0.084	0.060	0.010				
	04/27-05/11/71	0.096	0.066	0.017				
	07/30-08/13/71	0.083	0.069	0.018	3.2	0.9		
	05/18-06/30/72	0.088	0.059	0.010	0.0	0.0	3.2	2.2
	01/01-12/31/76			0.006				
	01/01-12/31/77			0.010				
	01/01-03/31/78			0.014				



TABLE 12  
MAXIMUM AMBIENT AIR CONCENTRATION, PPM  
1970 - 1982

Site No.	Sampling Dates	NO <sub>2</sub>			CO	HC
		1 Hour	8 Hour	Ar./Mean	1 Hour	8 Hour
4	07/31-08/14/70 03/26-04/12/71 09/23-10/14/71 11/10-11/19/71	0.097 0.118 0.059 0.124	0.068 0.107 0.041 0.101	0.016 0.018 0.018 0.020	2.1 0.0 0.0 0.0	0.3 0.0 0.0 0.0
5	09/04-09/18/70 03/12-03/26/71 10/19-11/01/71	0.055 0.146 0.117	0.051 0.113 0.093	0.013 0.018 0.029	2.1 0.4	
6	08/21-09/04/70 01/27-02/12/71 12/29-01/12/71 07/05-08/01/72	0.064 0.200 0.079 0.065	0.048 0.187 0.069 0.055	0.015 0.047 0.022 0.011	9.6 4.2 2.6 0.4	
7	09/28-10/12/71 02/26-03/12/71 11/09-12/10/71	0.031 0.106 0.074	0.018 0.081 0.055	0.007 0.016 0.019	0.8 0.1	
8	10/12-10/26/70 02/12-02/26/71 12/10-12/29/71	0.118 0.152 0.076	0.067 0.091 0.048	0.017 0.022 0.024	5.2 3.0 0.0	
13	11/14-12/31/73 01/01-12/31/74 01/01-12/31/75 01/01-12/31/76 01/01-12/31/77 01/01-12/31/78	0.003 0.004 0.008 0.005 0.008 0.010				
14	11/14-12/31/73 01/01-12/31/74 01/01-12/31/75 01/01-12/31/76 01/01-12/31/77 01/01-12/31/78	0.004 0.005 0.012 0.008 0.015 0.015				

TABLE 13  
NITROGEN DIOXIDE DATA  
SITE NUMBER 1  
1982

MONTH	HOURS	ARITH. (a) Avg., ppm	MAX. 24 HR. Avg., ppm
J	659	.014	.043
F	418	.012	.040
M	630	.009	.022
A	530	.004	.012
M	315	.004	.010
J	Down		
J	Down		
A	Down		
S	Down		
O	585	.10	.019
N	366	.064	.014
D	590	.093	.027
Annual	4093	.038	.043

(a) Standard is 0.05 ppm, annual arithmetic mean.

1982

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TABLE 15  
CARBON MONOXIDE DATA  
SITE NUMBER 1  
1982

Month	Hours	Arith. Mean ppm	1 Hr. Max. ppm	No. of Times 1 Hr. Standard (35 ppm) Exceeded	8 Hr. Max. ppm	No. of Times 8 Hr. Standard (9 ppm) Exceeded
J	741	1.4	12.6	-0-	8.1	-0-
F	540	1.17	21.3	-0-	7.4	-0-
M	650	.88	6.9	-0-	2.7	-0-
A	701	.65	2.6	-0-	1.4	-0-
M	708	.55	3.2	-0-	2.2	-0-
J	709	.86	5.5	-0-	3.7	-0-
J	730	.81	2.9	-0-	1.8	-0-
A	732	1.16	4.3	-0-	3.0	-0-
S	705	1.4	5.3	-0-	2.7	-0-
O	651	.62	3.3	-0-	2.7	-0-
N	474	.62	6.0	-0-	2.4	-0-
D	721	.67	5.8	-0-	3.4	-0-
Annual	8062	.90	21.3	-0-	8.1	-0-



TABLE 15  
 AMBIENT AIR, CARBON MONOXIDE, PPM  
 SITE NUMBER 1  
 1982

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual		
1 Hr. Maximum	21.3	5.5	5.3	6.0	21.3		
8 Hr. Maximum	8.1	3.7	3.0	3.4	8.1		
24 Hr. Maximum	4.1	2.2	2.4	2.3	4.1		
Mean.	1.17	.86	1.4	.67	.90		
Concentration Range			Hours			%	Cum. %
< 2.0	1734	2051	1944	1747	7476	92.73	92.73
2.0 - 2.4	84	29	153	56	322	4.00	96.73
2.5 - 2.9	42	20	47	21	130	1.61	98.34
3.0 - 3.4	24	8	14	10	56	.70	99.04
3.5 - 3.9	12	4	5	5	26	.32	99.36
4.0 - 4.4	3	2	2	1	8	.10	99.46
4.5 - 4.9	9	2		1	12	.15	99.61
5.0 - 5.4	5	1	2	1	9	.11	99.72
5.5 - 5.9	3	1		3	7	.09	99.81
6.0 - 6.4	3			1	4	.05	99.86
6.5 - 6.9	2				2	.02	99.88
7.0 - 7.4	2				2	.02	99.90
7.5 - 7.9							
8.0 - 8.4	1				1	.01	99.91
8.5 - 8.9	1				1	.01	99.92
9.0 - 9.4							
9.5 - 9.9							
10.0 - 10.4	2				2	.02	99.94
10.5 - 10.9							
11.0 - 11.4							
11.5 - >	4				4	.06	100.00
Total	1931	2118	2167	1846	8062	92.03	
Downtime	229	66	41	362	698	7.97	
Total Time at site	2160	2184	2208	2208	8760		

TABLE 17  
OZONE DATA  
SITE NUMBER 16  
1982

Month	Hours	Arith. Mean ppm	1 Hour Maximum ppm	No. of Hours 1 Hr. Federal or Florida Std. (0.12 ppm) Exceeded
J	672	.018	.057	-0-
F	532	.020	.066	-0-
M	702	.023	.080	-0-
A	707	.024	.062	-0-
M	735	.026	.078	-0-
J	592	.016	.078	-0-
J	735	.015	.065	-0-
A	736	.015	.060	-0-
S	712	.013	.057	-0-
O	734	.020	.052	-0-
N	710	.017	.047	-0-
D	738	.014	.045	-0-
Annual	8305	.018	.080	-0-

TABLE 18  
 AMBIENT-AIR-OZONE, PPM  
 SITE NUMBER 16  
 1982

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual		
1 Hr. Maximum	.080	.078	.065	.052	.080		
8 Hr. Maximum	.060	.073	.050	.049	.073		
24 Hr. Maximum	.044	.044	.026	.032	.044		
Mean	.023	.026	.015	.020	.018		
Concentration Range			Hours			%	Cum. %
< .010	548	530	949	741	2768	33.33	33.33
.010 - .019	421	478	546	553	1998	24.06	57.39
.020 - .029	343	359	423	496	1621	19.52	76.91
.030 - .039	351	288	185	324	1148	13.82	90.73
.040 - .049	187	231	64	63	545	6.56	97.29
.050 - .059	49	92	13	5	159	1.92	99.21
.060 - .069	5	42	3		50	.60	99.81
.070 - .079	1	14			15	.18	99.99
.080 - .089	1				1	.01	100.00
Total	1906	2034	2183	2182	8305	94.81	
Downtime	254	150	25	26	455	5.19	
Total Time at site	2160	2184	2208	2208	8760		

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TABLE 19  
OZONE DATA  
SITE NUMBER 21  
1982

Month	Hours	Arith. Mean ppm	1 Hour Maximum ppm	No. of Hours 1 Hr. Federal or Florida Std. (0.12 ppm) Exceeded
J	672	.018	.057	-0-
F	532	.020	.066	-0-
M	702	.023	.080	-0-
A	707	.024	.062	-0-
M	735	.026	.078	-0-
J	592	.016	.078	-0-
J	736	.013	.056	-0-
A	736	.014	.067	-0-
S	647	.016	.122	-0-
O	738	.023	.054	-0-
N	686	.020	.044	-0-
D	682	.021	.053	-0-
Annual	8165	.020	.122	-0-



1982

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TABLE 21  
OZONE DESIGN VALUES 1980-1982  
SITE NUMBER 16  
WIEBULL DISTRIBUTIONS

YEAR	NUMBER OF EXCURSIONS ≥0.12 ppm	NUMBER OF DAYS SAMPLED	% COMPLETE	MAXIMUM 1 Hr AVERAGE ppm	2nd MAXIMUM 1 Hr AVERAGE ppm	ANNUAL DESIGN VALUE ppm	THREE YEAR DESIGN VALUE ppm
1980	0	292	79.78	.098	.083	.097	N.A.
1981	0	318	87.12	.095	.089	.095	N.A.
1982	0	352	96.44	.080	.078	.084	.095

TABLE 22  
OZONE DESIGN VALUES, 1973-1982  
SITE NUMBER 21  
WIEBULL DISTRIBUTIONS

YEAR	NUMBER OF EXCURSIONS ≥ 0.12 ppm	NUMBER OF DAYS SAMPLED	% COMPLETE	MAXIMUM 1 Hr AVERAGE ppm	2nd MAXIMUM 1 Hr AVERAGE ppm	ANNUAL DESIGN VALUE ppm	THREE YEAR DESIGN VALUE ppm
1973	0	116	31.78	.111	.104	.130	N.A.
1974	0	363	99.45	.077	.074	.078	.106
1975	0	331	90.68	.104	.086	.097	.101
1976	3	270	73.97	.148	.142	.154	.123
1977	0	323	88.49	.106	.101	.106	.122
1978	0	138	37.81	.075	.069	.079	.128
1979	0	256	70.14	.082	.076	.081	.092
1980	0	299	81.69	.110	.102	.109	.101
1981	0	348	95.34	.103	.089	.098	.102
1982	0	354	96.99	.122	.080	.106	.106

TABLE 23  
SULFUR DIOXIDE DATA  
SITE NUMBER #22  
1982

Month	Hours	Arith. Mean ppm	1 Hr. Max. ppm	3 Hr. Max. ppm	No. of Times 3 Hr. Std. Exceeded (0.500 ppm)	24 Hr. Max. ppm	No. of Times 24 Hr. Std. Exceeded (0.1 ppm)
J	736	.004	.029	.028	-0-	.016	-0-
F	665	.004	.017	.015	-0-	.008	-0-
M	733	.002	.018	.015	-0-	.008	-0-
A	710	.005	.023	.018	-0-	.010	-0-
M	606	.004	.010	.008	-0-	.007	-0-
J	508	.005	.044	.043	-0-	.019	-0-
J	519	.002	.067	.053	-0-	.015	-0-
A	405	.001	.013	.013	-0-	.006	-0-
S	706	.002	.010	.009	-0-	.006	-0-
O	731	.002	.010	.010	-0-	.007	-0-
N	666	.002	.010	.010	-0-	.006	-0-
D	735	.001	.011	.011	-0-	.006	-0-
Annual	7720	.003	.067	.053	-0-	.019	-0-



1982

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#### IV AIR QUALITY INDEX

The Environmental Protection Agency (EPA) has developed a uniform standardized daily air quality reporting index, called the Pollutant Standard Index (PSI), locally called the Air Quality Index (AQI) to be used by State and local agencies. The use of this index for reporting air quality was made mandatory on May 10, 1979 in the Federal Register/Vol. 44, No 92/Part 58, Subpart E, Appendix G.

This index is dependent upon measured concentrations of the five pollutants which have been assigned National Ambient Air Quality Standards (NAAQS), Federal Episode Criteria, and Significant Harm Levels; i.e., total suspended particulate, carbon monoxide, sulfur dioxide, nitrogen dioxide, and ozone. The index converts air pollution concentrations to a normalized number on a scale of zero to five hundred, with the National Ambient Air Quality Standard for each pollutant being assigned the value of 100. This approach is believed to be easier for the public to understand than a report of actual pollutant concentrations. Index values are calculated for each of the five pollutants. The highest of these is the report value. Five descriptor words have been chosen to depict daily air quality: "good" (0-50), "moderate" (51-100), "unhealthful" (101-200), "very unhealthful" (201-300), and "hazardous" (301-500). If pollutant concentration warrant, the AQI report is expanded to include identification of the problem pollutant, cautionary statements and generalized health effects.

Adoption of the AQI by many pollution control organizations has reduced the confusion previously encountered due to the existances of many different indices. AQI has several advantages: (1) it is simple and can be easily understood by the public, (2) it can accomodate new pollutants, (3) it is based on a reasonable scientific premise, (4) it relates to National Ambient Air Quality Standards, Federal Episode Criteria, and Significant Harm Levels, and (5) it exhibits day to day variations.

The Palm Beach County Health Department samples for the above pollutants and has utilized the Air Quality Index since April 28, 1976. A typical air quality report for Palm Beach County would be "The Air Quality Index is 31. The ambient air quality is within the good range." Index advisories are issued to local newspapers, televisions and radio stations each morning and afternoon Monday through Friday. Table 25 gives a statistical analysis of the monthly morning and afternoon values. As noted, TSP or Ozone concentrations accounted for all values in the moderate range. Figures 3 and 4 show daily plots of the AQI for the year 1982.



TABLE 25  
AIR QUALITY INDEX  
WEST PALM BEACH  
1982

A.M. DATA

	Days					
Month	Good	Moderate	Maximum	Minimum	Mean.	SD
Jan.	20	-0-	35	18	26	5
Feb.	20	-0-	43	19	28	6
March	21	2	61	16	29	11
April	20	2	65	16	30	14
May	20	-0-	29	12	20	5
June	22	-0-	35	15	24	6
July	20	1	51	13	23	10
Aug.	21	1	51	11	24	10
Sept.	21	-0-	29	11	17	5
Oct.	21	-0-	35	10	21	6
Nov.	19	-0-	31	12	20	6
Dec.	21	-0-	35	15	21	5
Year	246	6	65	10	23	9

P.M. DATA

	Days					
Month	Good	Moderate	Maximum	Minimum	Mean.	SD.
Jan.	20	-0-	38	20	29	6
Feb.	20	-0-	42	17	29	8
March	22	1	52	18	34	8
April	20	2	65	17	38	11
May	20	-0-	48	17	34	10
June	22	-0-	50	19	31	10
July	20	1	54	13	22	9
Aug.	22	-0-	40	14	27	8
Sept.	20	1	60	13	24	12
Oct.	21	-0-	39	15	26	6
Nov.	19	-0-	31	15	23	5
Dec.	21	-0-	35	17	26	6
Year	247	5	65	13	29	10

Of the values in the moderate category, TSP was responsible for 5 morning and 3 afternoon AQI'S. Ozone accounted for 1 morning and 2 afternoon moderate designations.



# A.M. AIR QUALITY INDEX

WEST PALM BEACH, FLA.

1982

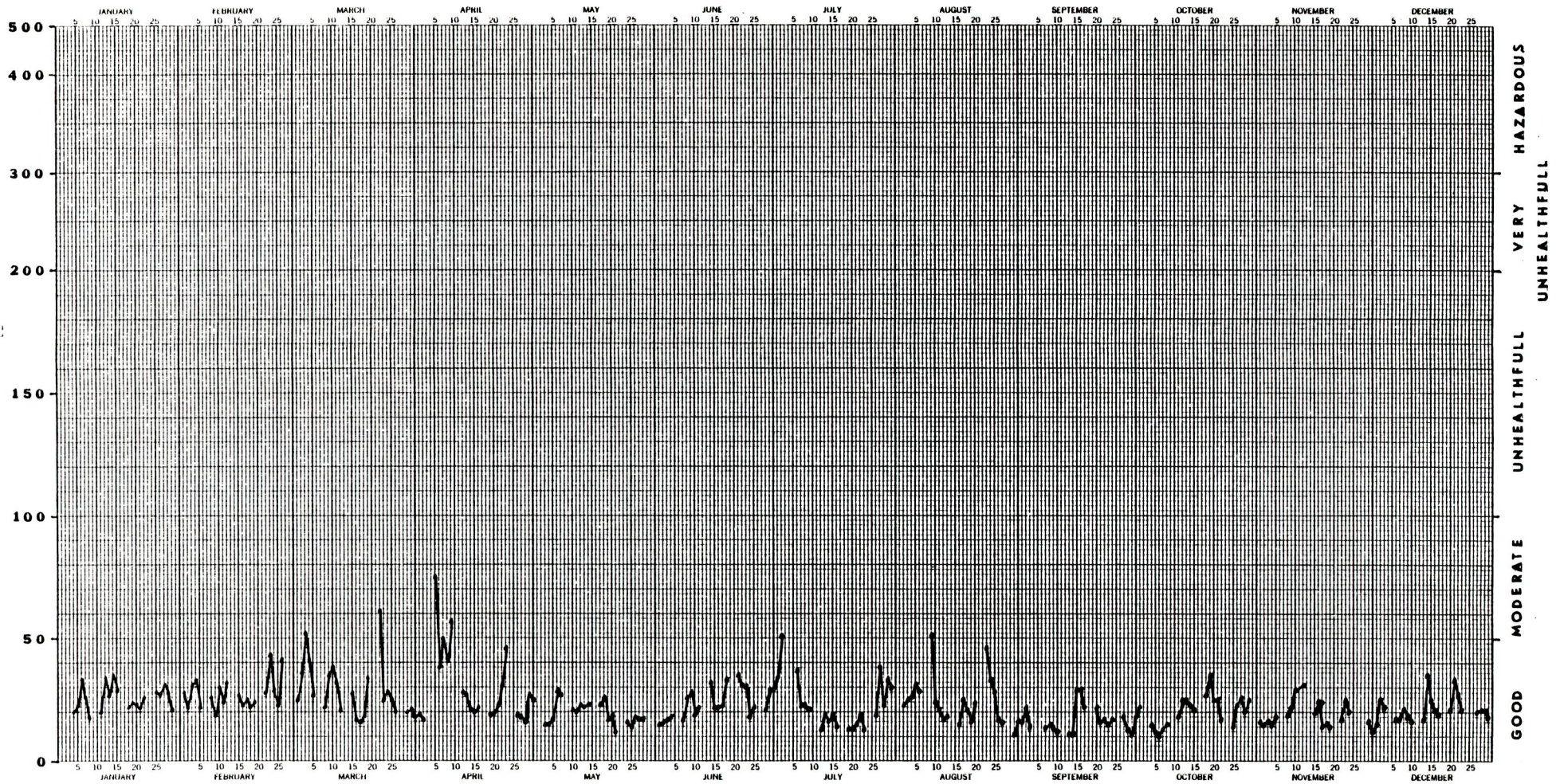


FIGURE 3



P.M. AIR QUALITY INDEX  
WEST PALM BEACH, FLA.

1982

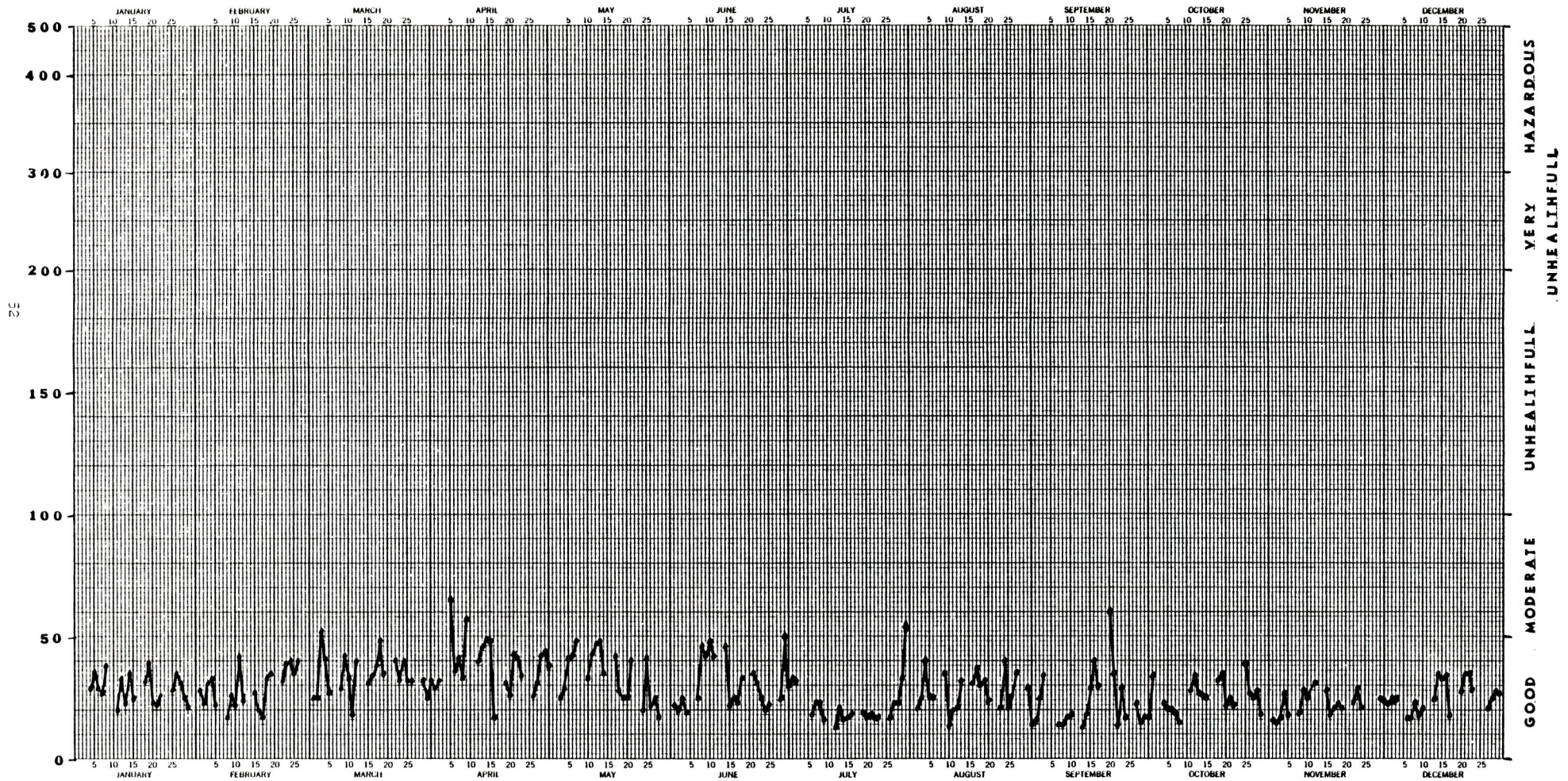


FIGURE 4



## V EMISSION INVENTORY

### INTRODUCTION

Air Pollution has come about as a by-product of the technological advancement of modern society. In this advancement, society has developed ways to prevent and control atmospheric emissions.

An initial step towards improving the air pollution situation is to define the problem areas by determining the sources and components of air pollution. This is accomplished by the emission inventory, which addresses the sources, pollutant types, and quantities of atmospheric emissions.

An emission inventory is an essential tool for an air pollution control program. It provides information for the design of an air sampling and air analysis program; the relative contribution of the various pollution sources; data for the development of control strategies; and information for regional planning authorities.

Limitations in the state-of-the-art knowledge introduce uncertainties in a number of factors, such as reported fuel usage figures, fuel composition, process information, and emission factors which will not produce highly precise information for the emission inventory. In spite of these limiting factors, the emission inventory can yield results with adequate accuracy for the purpose of a county air pollution survey.

The emission inventory presented in this report represents calculated emissions from major point sources and generalized estimates of emissions from area sources (Tables 26 and 27.)

## MAJOR POINT SOURCES

During 1982, there were at least 23 major air pollution point sources in Palm Beach County which emitted a significant emission tonage of one or more types of air pollution. A list of these major sources found in this chapter details air emissions by type in tons per year during 1982. A decline in the general economic activity throughout the county has caused the reduction in emission tonage this year as compared to prior years.

## AREA SOURCES

Area sources represent a collection of many small sources which may emit only small quantities of air pollutants, but because of the great number of small sources, their collective impact may be significant. The object of area source calculations is to obtain an accurate estimate of this collective contribution on total emissions. Such an estimate can never be exact because it would be impossible to determine the emissions from every small source. Volatile Organic Compound (VOC) emissions for Mobile Sources have been compiled by the Metropolitan Planning Organization (MPO) staff based on the Department of Transportation's Mobile 2 computer model.

Emission factors utilized in the inventory are found in:

(1) Compilation of Air Pollution Emission Factors, AP-42, Supplements 1-13, Third Edition, August 1982, published by the U.S. Environmental Protection Agency, Office of Air and Waste Management, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina, 27711.

(2) Guidelines for Air Quality Maintenance Planning and Analysis, Volume 7: Projecting County Emissions, EPA-450/4-74-008, Second Edition, January 1975, U.S. Environmental Protection Agency, Office of Air and Waste Management, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina, 27711.



- (3) National Emissions Data System (NEDS) Source Classification Code and Emission Factor Listing, January 1979, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Monitoring and Data Analysis Division, National Air Data Branch, Research Triangle Park, North Carolina, 27711.
- (4) Procedures for the Preparation of Emission Inventories for Volatile Organic Compounds, Volume I, EPA-450/2-77-028, December 1977, U.S. Environmental Protection Agency, Office of Air and Water Management, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina, 27711.
- (5) Mobile Source Emission Factors (For Low-Altitude Areas Only), EPA-400/9-78-006, March 1978, U.S. Environmental Protection Agency, Office of Air and Waste Management, Office of Transportation and Land Use Policy, Washington, D.C. 20460.
- (6) Revisions to the State Implementation Plan (SIP) for Palm Beach County, Florida, April 1983, Metropolitan Planning Organization of Palm Beach County.

TABLE 26  
1982 SUMMARY  
AIR POLLUTION EMISSIONS  
PALM BEACH COUNTY, FLORIDA  
TONS/YEAR

POINT SOURCES

A.P.I.S. NO. 50-50	SOURCE NAME	PARTICULATES	SO <sub>2</sub>	SO <sub>3</sub>	CO	HC	NO <sub>2</sub>	VOC	TOTAL
0005	GULF & WESTERN FOOD CO.	497.9	572.6	0.8	507.5	192.6	315.3	314.3	2401.0
0011	ADDICO	0.6	10.7	0.2	0.7		2.7		14.9
0015	BOCA RATON HOTEL	2.0	30.5	0.4	1.0	0.2	10.9	3.7	48.7
0016	ATLANTIC SUGAR ASSOC.	317.0	471.9	2.7	265.6	100.0	195.5	163.4	1516.1
0018	QUAKER OATS CO.	3.0	44.2	0.6	7.5	0.1	30.1	0.3	85.8
0019	OSCEOLA FARMS CO.	211.5	385.8	2.7	175.9	65.9	142.6	107.7	1092.1
0021	PRATT & WHITNEY	63.1	93.5	0.3	1150.6	7.3	166.2	298.3	1779.3
0026	SUGAR CANE GROWERS COOP	467.7	1477.9	1.8	397.0	149.8	280.2	244.6	3019.0
0042	FLORIDA POWER & LIGHT	508.8	1071.9	18.2	453.6	5.2	6223.9	20.3	8301.9
0045	LAKE WORTH UTILITIES	14.5	72.0	0.8	112.1	14.7	804.4	13.6	1032.1
0046	IDEAL CEMENT	1.4							1.4
0050	FLORIDA SUGAR REFINERY	9.0	125.6	1.6	1.7	0.3	18.8		157.0
0061	U.S. SUGAR CORP. - BRYANT	305.6	439.1	0.6	393.5	149.3	244.6	243.7	1776.4
0073	TALISMAN SUGAR CORP.	204.5	381.8	1.6	256.4	96.8	178.6	158.1	1277.8
0081	A. G. HOLLEY HOSPITAL	6.6	63.9	0.8	3.9	0.5	11.5	0.6	87.8
0084	EASTERN CEMENT	8.4							8.4
0087	RANGER CONSTRUCTION IND.	20.5	42.1	0.6	2.6		10.5	0.1	76.4
0088	CITY OF PAHOKEE	9.4	3.7		13.4	1.5	4.2	2.5	34.7
0155	F. H. FOSTER OIL CORP.							0.0	0.0
0158	COOPER OIL CO.							26.3	26.3
0161	HOWELL OIL							30.0	30.0
0162	CHARLES BROWN OIL							29.9	29.9
0163	BERNER OIL CO.							12.4	12.4
POINT SOURCE TOTALS		2651.5	5287.2	33.7	3743	784.2	8640.0	1669.8	22809.4

TABLE 27  
1982 SUMMARY  
AIR POLLUTION EMISSIONS  
PALM BEACH COUNTY, FLORIDA  
TON/YEAR

AREA SOURCES	AREA SOURCES								ORGANIC ACIDS	TOTALS
	PARTICULATES	SO <sub>2</sub>	SO <sub>3</sub>	CO	HC	NO <sub>2</sub>	VOC	ALDEHYDES		
MOBILE SOURCES:										
Highway/Off Highway	1000	506		148098	2893	13218	13802	40	37	179594
Aircraft	12	48		4872	15	374	534			5855
Vessels	15	137		4	1	28	1932			2117
Railroads	42	95		217	3	616	84	9	12	1078
FUEL COMBUSTION:										
Miscellaneous	22	272	4	70	6	299	7			680
MINERAL PRODUCTS:										
Concrete Batching	45									45
SOLID WASTE DISPOSAL:										
Incineration	13	3		14	2	10	2			44
Open Burning	587			4831	315		513			6246
SUGAR CANE FIELD:										
Burning	6366			61388	4608	7518				79880
VOLATILE ORGANIC EMISSIONS										
Storage & Marketing of Petroleum Products							1846			1846
Industrial Processes							164			164
Industrial Surface Coating							178			178
Non-Industrial Surface Coating							835			835
Other Solvent Use							3115			3115
AREA SOURCE TOTALS	8102	1061	4	219494	7843	14545	30530	49	49	281677
POINT SOURCE TOTALS	2651.5	5287.2	33.7	3743	784.2	8640	1669.8	0	0	22809.4
GRAND TOTALS	10753.5	6348.2	37.7	223237	8627.2	23185	32194.8	49	49	304486.4



